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**Crowdsourcing in the Food Industry: The impact of
Creator's Body Type and Gender on Healthy Food
Consumption**

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Paper presented as partial requirement for obtaining the
Master's degree in Information Management

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**CROWDSOURCING IN THE FOOD INDUSTRY: THE IMPACT OF
CREATOR'S BODY TYPE AND GENDER ON HEALTHY FOOD
CONSUMPTION**

by

José Ferreira de Castro

Paper presented as partial requirement for obtaining the Master's degree in Information Management, with a specialization in Business Intelligence and Knowledge Management

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Abstract

Instead of resorting exclusively to marketing experts or designers, organizations are almost required to generate the desired results with the contribution of the “crowd” of consumers. With crowdsourcing activities, companies not only achieve great results, but also change the consumer role from passive to active and ready to collaborate in companies’ offers.

The current research suggests that, in a crowdsourcing context, the physical appearance of the individual (normal vs. obese body type) who created a certain food product, has an influence in the perception towards the same food product. This study further tests the moderating influence based on gender, investigating the changes in the healthy eating behavior of male and female participants after randomly confronted with a picture of a normal versus an obese individual that created the product. This effect of the creator’s body type and gender on healthy food consumption is justified by the gender differences in terms of physical self-perception and social comparison. In two studies we test our hypothesis, evaluating the perception of healthiness and tastiness in two different sets of food products commonly perceived as healthy and unhealthy (pilot study) and the effect of creator’s body type and gender on healthy food consumption (study 1). The findings have implications for research and practice regarding body image and healthy food literature.

Keywords: body image; new products; food perception; food consumption; gender differences; healthy behavior.

Papers originated from this Thesis

De Castro, José Ferreira & Pinto, Diego Costa. "Crowdsourcing in the Food Industry: The Impact of Creator's Body Type and Gender on Healthy Food Consumption". Submitted to Journal for Publication in 2018.

Introduction

Nowadays, almost every industry chooses to crowdsource as a way to innovate, in the words of François Pétavy, CEO of eYeka, the online crowdsourcing and co-creation platform, “The consumer is becoming a part of the world’s biggest companies and agencies, which is a profoundly positive way to co-create value together.”.

With the acknowledgment of the current importance of crowdsourcing activities and the commitment of several big companies to pursue this practice in the future, several studies have been conducted. Various articles focused on this topic, testing the effect on consumers if products were labeled as user co-created (Fuchs et al., 2013), if services such as advertising were labeled as co-created (Thompson & Malaviya, 2013) and also the marketing value of crowdsourced new products (Nishikawa, Schreier, Fuchs, & Ogawa, 2017).

According to eYeka 2017 report, Fast-Moving Consumer Goods (FMCG) brands are the ones that present higher levels of crowdsourcing participations and the industry in which crowdsourcing activities are most used and present the greatest growth is the food industry (Pétavy et al., 2017).

Food products, as the most common type of products used in crowdsourcing activities (Pétavy et al., 2017), are deeply affected by this factor. By being open to a network of a vast number of individuals, any person can participate in these activities, without any constraints regarding one’s physical appearance or body type (Brabham, 2008).

McFerran, Dahl, Fitzsimons and Morales (2010) suggest that the food choices and food consumption made by consumers are influenced by others body type, in particular, if the person is thin or obese. Moreover, the same authors defend that priming people with an

overweight person image versus thin person image has a different effect on their eating behavior.

Some researches indicate the increase of high-caloric food intake, more particularly in developed and industrialized countries, as one of the biggest causes of obesity (Chandon & Wansink, 2007; Young & Nestle, 2002), this factor intensifies the relation between both variables, that is, the association of obese people to the consumption of unhealthy food products (Klaczynski, Goold, & Mudry, 2004). "Stereotypically, weight and health are perceived as inversely related" (Vartanian, Herman, & Polivy, 2007, p.268), increasing the mentioned association in the overall population.

However, across gender, the reactions of an image with a certain body type can vary. In general, women have a high level of body image dissatisfaction, while men tend to be more satisfied with their bodies (Gestsdottir et al., 2018) consequently, women dissatisfied about their physical appearance perform more appearance-related social comparisons (Carlson Jones, 2001).

Deeply influenced by these factors, along with the presentation of individuals with different body types, the existent gap between male and female eating habits and beliefs will possibly increase (Pinkasavage, Arigo, & Schumacher, 2015; Wardle et al., 2004).

In the last years, the food industry has been making a great investment introducing products claimed as healthy (low fat; low sugar; organic) generating a positive perception, in loyalty and engagement, on the consumers towards the food products (Krystallis & Chrysochou, 2011). However, this perception is, most of the times, mediated by the presented food label (Sirieix, Delanchy, Remaud, Zepeda, & Gurviez, 2012) or the presented food packaging (Venter, Van Der Merwe, De Beer, Kempen, & Bosman, 2010), narrowing the marketing communication

strategies. By this way, this research provides important managerial contributions, indicating the path for new marketing strategies that food product companies can pursue, using the product creator body type, or the body type presented in the food product marketing communication for managing the perception towards the same and enable more accurate gender-based targetization.

Nowadays, the food industry has a crucial influence in shaping the eating habits of people, since early ages, through their perspectives on food (Atik & Ertekin, 2011). For instance, childhood obesity is a major health issue in several countries, this factor is deeply connected with the adopted lifestyle and eating behaviors during youth, which often results in negative food patterns along the adulthood (Von Normann, 2009). With this study findings, the perceptions on food can be reshaped and positively manipulated taking into account the feelings towards the individual's body type associated with the product and ultimately contribute to the decrease of the mentioned health concern.

The present research also makes an important contribution to the existent literature in the study of the effects of body type on food products perception. Although several researches approach the different behaviors in food intake when confronted with the physical appearance of people around (McFerran et al., 2010a), of the person who serves the food products (Huneke, Benoit, Shams, & Gustafsson, 2015) and of the people presented on media (Anschutz, Engels, Becker, & Van Strien, 2009; Boyce, Kuijer, & Gleaves, 2013), this study explores the changes in food consumption and in the perception towards food products based on the body type of the person who creates the same food product. Additionally, the research situations mentioned above, evaluate the study population as a whole, in the present research gender has a moderating effect, by that, the behavior of male and female individuals are

analyzed separately. More specifically, this study findings also analyze the moderator effect of gender in the above-mentioned relationship.

The present study examines the relationships between the body image of the person who develops a food product and the effect on the perception of the same product and on the eating behavior of several individuals. This relationship will be analyzed with the measurement of the individual's gender as a moderator factor, with the expectancy of a higher level of healthy food consumption by female individuals when confronted with an obese body type and a similar healthy food consumption between both genders when primed with a normal body type.

This research is organized as follows. In the first section of this paper, a theoretical background will be introduced, and a conceptual development will be made, explaining crowdsourcing in the food industry, the effects of physical appearance in interpersonal relationships and gender differences in food choice based on body image. Finally, the hypothesis to study will be indicated along with the research model.

Succeeding the indicated literature review, the methodology of the research will be presented, starting with a general overview of the studies performed, followed by the detailed description of the participants involved, the procedure and measures applied in each study and finally the results obtained with the respective analysis and discussion.

With the studies properly described, the last part of the paper will be dedicated to the general discussion related to the study findings, conclusions, limitations and suggestions for future researches.

Literature Review

Crowdsourcing in the Food Industry

Crowdsourcing is described as “the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call” (Howe, 2006). In other words, crowdsourcing is an online model that derived from the well-known concept of Outsourcing, but instead of resort to secondary enterprises or specialists inside the company, where the managers and the decision-makers are deeply embedded in the problem itself, the companies search for new solutions in the general population, so-called “the crowd”, outside of their “own professional world”, where people with different backgrounds and perhaps without the same level of expertise, can reach the desired output (AFUAH & L. TUCCI, 2013; Poetz & Prügl, 2010).

With the exponential growth of consumer power in the digital age, social media and online channels, the connection between companies and individuals became more active and the respective flow of creative ideas increased (Labrecque, vor dem Esche, Mathwick, Novak, & Hofacker, 2013), consequently more and more organizations “have developed ongoing crowdsourcing communities that repeatedly collect ideas for new products and services” (Bayus, 2013, p. 226), making their consumers, stakeholders who add value to their products, instead of just targets of their value proposition.

The organizations that apply this collaborative model are disrupting several different industries, with their respective user communities, from clothing to technology, entertainment or even food industry (Bayus, 2013; Nishikawa et al., 2017). Focusing on the latter, as the industry that presents the biggest growth in this paradigm, the choice towards food products presents a variety of factors that affect their perception and consequently

choice and consumption.

One of the major variables that influence the choice and the purchase of food products is health and the respective healthy perception (Furst, Connors, Bisogni, Sobal, & Winter Falk, 1996). In other words, most of the times they are categorized as healthy or unhealthy, and this categorization deeply affects food purchase and intake patterns (Ronique Provencher, Polivy, & Herman, 2008).

The perceived healthiness and the consumption of food products can be influenced by several factors regarding the product. First, the type of food and the perceived nutrient content, claiming that will improve the normal function of the body and reduce the disease risk (Williams, P.G., 2005). Secondly, the branding and the food packaging, perhaps the first contact between product and consumer, meaning that food marketing plays an important role in food choices and demonstrates how brands can have a great persuasive power, the physical contextual display (e.g., supermarkets or restaurants) that improves the connection and the senses between individual and food products (Provencher & Jacob, 2015). Thirdly, the taste or perceive the taste of the products (Ve, 2016). Finally, but not a less important variable affecting food consumption, is other's physical appearance, from the surrounding people (McFerran et al., 2010a), to the person who serves the food (for example the waiter/waitress) (Huneke et al., 2015), static and dynamic media images (Anschutz et al., 2009; Boyce et al., 2013) or even the food creator.

Interpersonal Physical Appearance Effects

“Humans have always competed to be seen as attractive by others because those regarded as so were chosen in detriment of the less attractive ones, and had better access to advantageous social resources (e.g., support from others, allies, and social partners)” (Ferreira, Pinto-Gouveia, & Duarte, 2011, p.55)

Physical appearance, based on a face-to-face interaction, video or even a photograph, has a critical role when developing first impressions and it often leads into personality judgments (Naumann, Vazire, Rentfrow, & Gosling, 2010), which means that the perceptions and the identification with a certain individual, and consequently the objects related to him, can be highly affected by this factor.

People tend to feel more involved with almost identical peers and “they perceive attitudes held by similar others as more appropriate to them” (Thompson & Malaviya, 2013, p. 34), health choices can be included in that set of attitudes. This mentioned identification/judgment can be made based on several personal characteristics, one of the most relevant is obesity that very often leads to discrimination and can have a greater adverse judgement than other stereotypes and discriminated groups like Muslims or homosexuals (O ’brien, Latner, Ebnetter, & Hunter, 2012).

In fact, studies have been developed, showing that the food choice and consumption might be directly linked with body type and appearance not only of the surrounding people but also of the person that serves the food product (McFerran, Dahl, Fitzsimons, & Morales, 2010b).

Gender Differences in Food Choice Based on Body Image

Food choice plays a central role in people's life, it is not only determinant on satisfying our biological need, but also impacts the overall lifestyle, body image and emotional stability. Food choice, as complex human behavior, can be influenced by diverse external factors, such as, cultural background or economic and social context, but the intrinsic factors, like age and gender, also have a significant weight when making eating decisions (Arganini, Saba, Comitato, Virgili, & Turrini, 2012).

When focusing on gender, several psychological variables can justify different eating habits. First of all, women take healthy behaviors and healthy lifestyle more seriously when compared with the opposite gender (Gough & Conner, 2006), although some men express high health concerns, the majority are skeptic to nutrition messages and "frequently perceive healthy eating as monotonous and unsatisfying" (Arganini et al., 2012, p.86) having an overall preference for meat instead of vegetables or fruits (Sobal, 2005).

Secondly, women have a higher concern regarding their body weight and body self-perception (Johnson & Wardle, 2005), accordingly to several studies, women often see themselves as overweight and demonstrate displeasure about their body, wishing to be lighter, compared with men (Mcelhone, Kearney, Giachetti, Zunft, & Martínez, 1999; Neumark-Sztainer et al., 2006), consequently resulting in more dietary restraints.

Women are more susceptible to body self-perception, have also the tendency to compare themselves to others. This comparison, usually made with thinner bodies, may result in low self-esteem, depressive symptoms and consequently unhealthy dieting behaviors (Van Den Berg et al., 2007).

When comparing themselves with women they consider having worse body appearance, it enhances self-esteem and body perception, increasing the desire to lose weight (Lew, Mann, Myers, Taylor, & Bower, 2007) and consequently choose healthy eating.

Men can also present high levels of body dissatisfaction, consequently increasing the use of training supplements and unhealthy eating behaviors (Key, Jadd, & Mills, 2012). However, men tend to idealize and social compare themselves with a muscular body type (Arbour & Ginis, 2006), by this way their consumption behavior is more affected by muscular physiques than other types of physical appearance like a normal or an obese body type.

Taken together, we propose that gender is a determinant factor when moderating the relationship between the presented body type and the consumption of healthy food. Specifically, when confronted with an obese body type, we argue that female individuals have the tendency to eat a large amount of healthy food. Conversely, when confronted with a normal body type, male individuals tend to eat similar portions of healthy food. Formally, the hypothesis can be stated as follows.

H₁: Gender moderates the effect of product creator body type on healthy eating behavior.

H_{1a}: When confronted with obese (vs. normal) body type, female individuals will tend to eat more healthy food.

H_{1b}: When confronted with normal (vs. obese) body type, male individuals will tend to eat similar portions of healthy food.

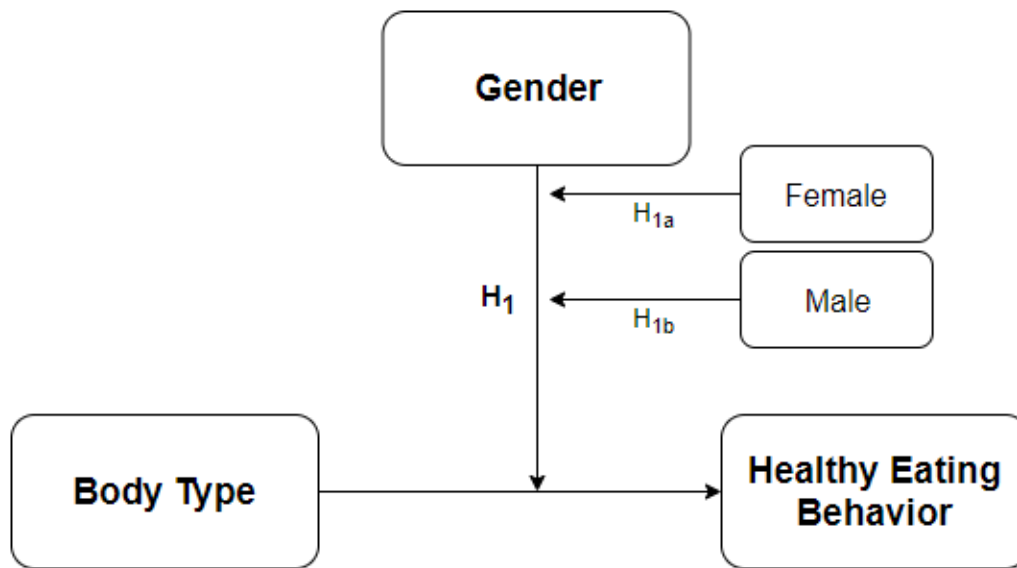


Figure 1 – Research Model

Overview of Studies

The current research consists in two experimental studies, both were applied in a European population. To develop a complete and consistent major study (study 1), a pilot study was performed. This study explores the perception of healthiness and tastiness among a set of salad pictures and a set of pizza pictures. With the purpose of creating a pair of food products (one from each set), exclusively representing a healthy and an unhealthy food product. The indicated perceptions are essential in a way that, the best combination of products, should have the most distinct healthiness perception and simultaneously the most similar tastiness perception, in order to rely only on the first factor.

After the completion of the pilot study, the results were incorporated in the construction of study 1. This study provides evidence to support the moderator effect that participant's gender has on the respective food consumption when confronted with images of people

different physical types (H_1). Study 1 also contributes for performing two separated analysis based on the gender eating behavior, where female individuals eat a superior amount of salad when compared with males, when primed with an obese body type picture (H_{1a}) and where male and female individuals eat similar portions, when primed with an obese body type picture (H_{1b}).

Pilot Study

Objectives

The pilot study examines the participant's perception on two distinct types of meal, measuring the perception of healthiness and tastiness in a set of four different salads and after in a set of four different pizzas. Having the purpose of establishing a pair of products (one from each set) that respectively represents a healthy and an unhealthy food product, the chosen salad and pizza items should present the most distinct healthy values and most similar taste values.

There is no hypothesis associated with this study, the main objective of the pilot study is to pre-test the food products mentioned above and set the best combination of a salad and a pizza to be included and presented in the study 1.

Participants and Design

After the analysis of all the sixty-three responses and the rejection of five participations, fifty-six Portuguese participants (51% female, $M_{age} = 21$ years) were submitted to a set of questions regarding their perception about two different types of food products.

Procedure and Stimuli

Participants were presented with a questionnaire, following the study participation consent, the first three questions of the same (respectively about their age, educational level and gender) had the purpose of demographically segment the respondents.

After the first questions, the study is divided into two segments. In the first one, participants were presented with four images of salads, in a random order, with distinct ingredients and in different perspectives.

The second segment is very similar to the first one, but instead of salads, four different types of pizza were presented. In order to guarantee the coherence with the options above, the four pictures of pizza were “symmetrical” with the four pictures of salad (i.e., in both segments there was one salad and one pizza with no background context, one with a view from the side with a background context and two distinct with a view from above with two different background context).

Measures

The first task was to choose the overall best salad from their point of view, between the four options. After this step, participants were asked to classify the four salads (in a scale from 1 to 9) in terms of taste (1-Not tasty; 9-Very tasty) and healthiness (1-Not healthy; 9-Very healthy).

The procedure for the second task is exactly the same as before, the participant had to choose their preferred pizza and then evaluate each option in terms of taste and healthiness, with exactly the same scale as before (1-Not tasty/healthy; 9-Very tasty/healthy).

For identification and analysis purposes, the pizzas and the salads were nominated. The given names were neutral in gender, in order to avoid a potential bias in the several responses and classifications (Fleet & Atwater, 1997). The salads were named “Alfa”, “Beta”, “Gama” and “Lambda”. The pizzas were named “Sigma”, “Omega”, “Theta” and “Kappa”.

The salad and the pizza were chosen with the purpose of, respectively, illustrate a healthy and an unhealthy type of food, based not only on the caloric content of their basic ingredients but also on their perception as more and less hedonic and likelihood to contribute to obesity (Garsetti, de Vries, Smith, Amosse, & Rolf-Pedersen, 2007).

Results

A paired-samples t-test was conducted, in order to compare the healthy and the taste perception between two sets of different food products and understand the correlation between each pair from both sets (salad and pizza).

Healthy Perception. Results from Paired Sample T-test performed for the healthiness variable showed a statistically significant difference between the two conditions for all the 16 combinations (Table 1 in appendix), that is, all pizzas and salads are very different, in terms of healthiness perception, for every possible combination (all $p_s < 0.001$).

Taste Perception. Results from Paired Sample T-test performed for the taste variable, showed different values for the several pairs (Table 2 in appendix). Unlike the previous test, here the significance values differ between the several combinations, being the lowest p-value for the salad “Lambda” ($M_{salad_Lambda} = 6.5$, $SD = 2.02$) and pizza “Theta” ($M_{pizza_Theta} = 7.5$, $SD = 1.50$) combination ($t(55) = -3.843$, $p < 0.001$) and the highest p-value ($t(55) = -0.955$, $p = 0.344$) for

the salad “Beta” ($M_{salad_Beta} = 6.6, SD = 2.20$) and pizza “Sigma” ($M_{pizza_Sigma} = 6.9, SD = 1.86$) combination. These values correspond, to the pair that has the most distinct taste perception and the pair that has the most similar taste perception, respectively.

Discussion

The major objective of this study was to select the most adequate pair (salad vs. pizza), among all possible combinations, to apply in study 1, representing respectively a healthy and an unhealthy option. Since the main purpose is to separate the two products based only on the healthiness level, the best combination should be the pair with most different values in this variable and with the most similar taste values, simultaneously. By this way, the choice to be made, in the next study, on one food product over the other, should be based regarding only the first variable.

Since the healthiness Paired Sample T-test resulted in very similar values for the several pairs, the choice for the best combination will mostly rely on the highest p-value between the two conditions of the taste test. This value is registered in the correlation between salad “Beta” (Image 6 in appendix) and pizza “Sigma” (Image 9 in appendix). In conclusion, these two food options are more adequate to presented in the development of study 1.

Study 1

Objectives

Study 1 examines the effect that body type of the person, who created a certain food product, has on healthy eating, in both female and male individuals. More specifically, this study will test in what way, the confrontation with an obese (vs. normal) body type affects women salad consumption (H_{1a}) and the confrontation with an obese (vs. normal) body type affects men salad consumption (H_{1b}).

Participants and Design

One hundred and sixty-three Portuguese participants participated in this study (56.4% female; $M_{age} = 32.7$ years; $SD = 1.34$). The hypothesis, designed in the research model, will be tested using a 2 (person image body type: obese vs normal) x 2 (gender: female vs male) between subject's experimental design.

Procedure and Stimuli

Like in the pilot study, participants were presented with a questionnaire, following the study participation consent, the first three questions of the same were applied (about their age, educational level and gender), which had, not only, the purpose of enabling the creation of a demographic segment of the population and perform statistical analysis in the future, but also to adapt the questionnaire itself.

Both male and female participations were essential to this study, however, there were distinct individuals pictures presented whether the respondent was male or female, because, not only, physical comparison and body deception (i.e., purposely give wrong body and appearance information to others) differs depending on gender (Hildebrandt, Shiovitz, Alfano, & Greif, 2008), but also the food choices, health beliefs and dieting are influenced by this factor (Wardle et al., 2004). With that being said, the person's image presented to female participants was female and the opposite happened when dealing with male participants.

For the purpose of analyzing the responses prompted by different body types, female and male participants were randomly primed with the picture of an obese individual and with the picture of the very same individual but with a normal body type (Images from 1, 2, 3 and 4 in appendix). Additionally, to better illustrate a real situation, the female individual was named "Rachel" and the male individual "Dave".

After the person's image presentation, comes the choice between the pizza or the salad, supposedly created by the shown individual. This paired combination of options came from the results obtained by the pilot study. The food choices mentioned above will be presented to participants in similar proportions since the quantity factor can lead to different consumption actions (Wansink & Chandon, 2006).

Measures

In order to measure the independent degree of preference, a question with a scale from 1 to 9 was made, with 1 being the preference for the salad and 9 the preference for the pizza. By matching the answers between this question and the previous one, some evidence of the

creator's impact can be viewed. For closing the chapter of the choice between the food products, two final queries were applied regarding the portion, of the salad and of the pizza, they would have.

Following the above block of questions, participants were inquired about their perception towards the food product creator. This chapter can be divided into two parts, it begins by requesting the respondent to select the value, in a scale from 1 to 9, in which they think they are similar to the person who created the product, if they have similar preferences than him/her and if they feel any kind of connection or sympathy (1 – not similar/no connection; 9 – very similar/great connection). The second part consists in a group of ten sentences, in a randomized order, to indicate the perception towards the creator in a more specific way (also in nine-point scale).

Six of these phrases reference the possible healthy aspect/attitudes of the individual: “Has the habit of consuming food products with high sugar tenor”; “Has the habit of consuming food products with high grease tenor” (McFerran et al., 2010a; Weiner, Perry, & Magnusson, 1988); “Has the habit of consuming fruits and vegetables” (Huneke et al., 2015; Whitehead, Re, Xiao, Ozakinci, & Perrett, 2012); “Has the habit of consuming alcoholic beverages”; “Has the habit of smoking” (Belloc & Breslow, 1972; Huneke et al., 2015); “Has the habit of practicing physical exercise” (“NCDs | Physical activity,” 2018).

The remaining four expressions reference the personality aspects of the individual: “Is sympathetic”; “Is sociable”; “Is creative”; “Is extrovert” (Barrick & Mount, 1991). Besides obtaining the psychological impression towards the shown person, the main intention of adding these last sentences was avoiding participants to understand the purpose of this particular exercise and by that avoiding biased answers.

Once the questioning about the individual is concluded, begins the chapter regarding the previously chosen food product. It starts by asking the respondents, the amount (in %) of the meal they would have and how regularly they have this type of meal (from “every day” to “less than once a month” or “never”). Then, in a nine-point scale, participants are requested to answer a series of healthy classification exercises towards the chosen food product, starting with the broader and more direct one (“How healthy do you consider this meal?”) and then followed by more subjective ones such as, how it would affect the participants weight if consumed regularly, if it is a quality meal considering the ingredients, if it is fit for a healthy menu and the opinion about its caloric content.

Finally, in order to complete the details about the interviewee and his/her state of mind during the participation, they answer the last two short blocks of the questionnaire. The first one asked if the participant was hungry when he/she ate for the last time and what was the meal/food product at that time. The second block was composed only a question about the weight and another one about their height, with the final objective of calculating their Body Mass Index (BMI), and by this way, acknowledge the respondent body type (World Health Organization, 2018).

Results

In order to perform a clear statistical analysis, after the examination and organization of the responses data set, a new variable was created based on the pictures of body types presented to participants. This new variable assumes the value 1 if the image shown was a person with a normal body type and 2 if the images shown was a person with an obese body type. By this way is possible to isolate the body type factor.

Manipulation Check. Results from an independent samples t-test supported the effect of the product creator body type on the perception of healthy aspect/attitudes of the same, mentioned above. For the sugar eating ($t(161) = -7.66, p < 0.001$), grease eating ($t(161) = -6.72, p < 0.001$), fruit and vegetables eating ($t(161) = 5.02, p < 0.001$) and practicing physical exercise ($t(161) = 7.70, p < 0.001$) characteristics there as a significant difference between normal and obese body type. On the other hand, only the perception towards alcohol drinking ($t(161) = 0.51, p = 0.612$) and smoking ($t(161) = -1.48, p < 0.2$) was not affected by the creator's body image.

Control variables. Results from an independent samples t-test supported the effect of the product creator body type on the perception of the personality traits of the same, mentioned above. The perceptions regarding the social ($t(161) = -0.88, p = 0.930$), creative ($t(161) = -1.16, p < 0.3$) and extrovert ($t(161) = 0.46, p = 0.646$) aspects of the product creator did not present a significant difference between the two body images. However, the sympathetic aspect of the individual resulted on a significant difference between normal and obese body type ($t(161) = -3.10, p < 0.003$).

Healthy Eating Behavior. Results from 2x2 ANOVA revealed the effect of the confederate body type on the amount of salad eaten (healthy eating behavior), moderated by gender ($F(1, 159) = 9.22; p < 0.01$). The findings provide support for the H_1 .

Obese body type effect. A 2x2 ANOVA with the quantity of salad eaten as a dependent variable was performed with male participants ($M_{male_obese} = 3.17; SD = 1.320$) and female participants ($M_{female_obese} = 4.23; SD = 0.947$) with the condition of an obese body type picture. The stated results indicate that, when primed with an obese body type, female

individuals tend to eat more salad ($F_{(1, 159)} = 12.563; p < 0.01$). This result provides support for H_{1a}.

Normal body type effect. A 2x2 ANOVA with the quantity of salad eaten as a dependent variable was performed with male participants ($M_{male_normal} = 3.89; SD = 1.345$) and female participants ($M_{female_normal} = 3.69; SD = 1.476$) with the condition of a normal body type picture. The present results show that, when confronted with a normal body image, male and female individuals tend to eat a similar portion of salad ($F_{(1, 159)} = 0.463; p = 0.497$). This result provides support for H_{1b}.

Figure 1 illustrates the results of confederate body type and gender on the amount of salad eaten (healthy eating amount).

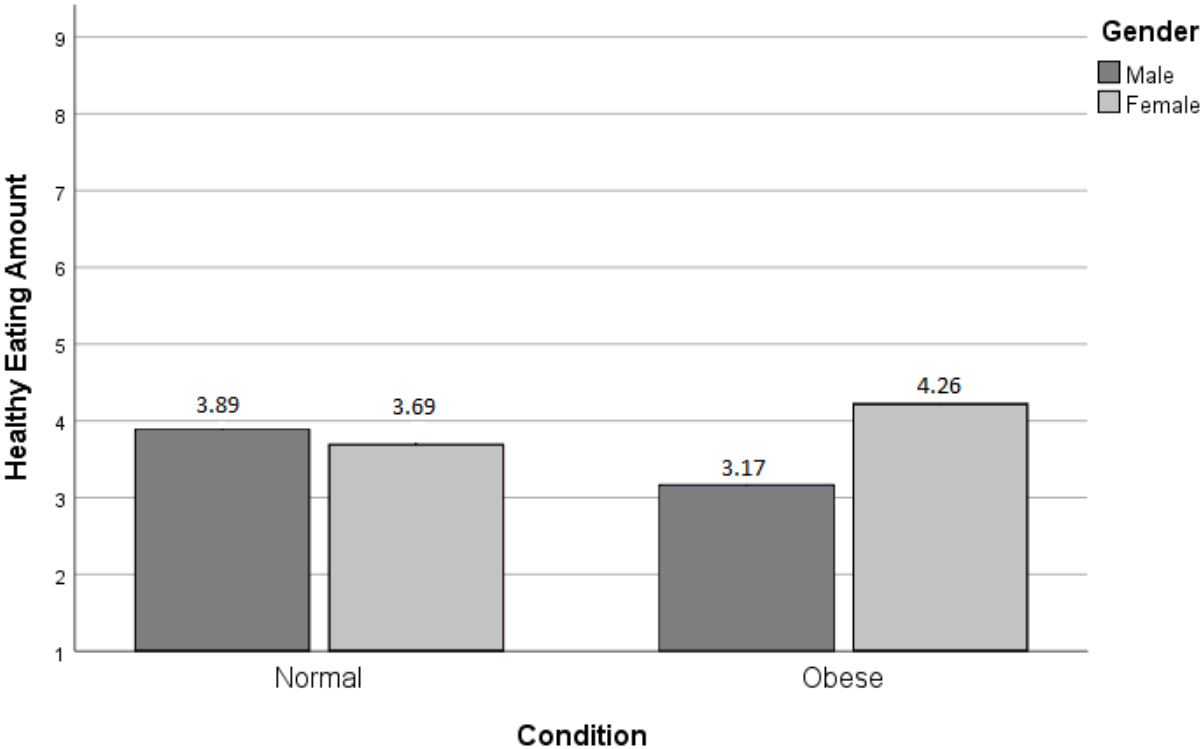


Figure 1 – Amount of Salad eaten for each body type based on Gender

Discussion

Study 1, elaborated with the findings from the pilot study, supports the hypothesis 1, demonstrating that, when moderated by gender, the effect of priming a picture of a normal body type (vs. obese) provokes a statistically significant consumption difference, in the healthy eating amount. It's also safe to say this difference is accentuated in the obese category.

Moreover, in a category detailed analysis, it is possible to observe in the right side of the previous plot graphic, that when confronted with an obese individual, female participants have the tendency to consume a bigger quantity of salad when compared to men (H_{1a}).

On the other hand, when confronted with an image of an individual with a normal body type, the amount of salad eaten has a tendency of being very similar in both genders (H_{1b}).

These conclusions, support the fact that social comparison, with different intensities among gender, have a clear effect on the food consumption and also the tendency of women on dieting and avoiding high-fat foods (Pinkasavage et al., 2015; Wardle et al., 2004; Wardle, Waller, & Rapoport, 2001).

General Discussion

In two studies, in a crowdsourcing context, it was possible to demonstrate the moderator effect of gender on the effect of physical appearance on healthy eating. By doing so, this premise was verified demonstrating the reaction of male and female participants when randomly presented with a picture of individuals with different body types. In the first case, when confronted with a normal body type, the amount of salad eaten (the healthy product of

the research) versus pizza (the unhealthy product), both male and female individuals showed the same intake intentions. Although, in the second situation, when primed with a picture of an obese individual, women intended to consume a significantly bigger amount of salad, compared with the opposite gender.

Theoretical Implications

The study findings offer important theoretical insights and also social and managerial implications. First, whereas several researches approach the distinct behavioral patterns in food consumption, influenced by the body image of the surrounding individuals (McFerran et al., 2010a), the person who serves the food products (Huneke et al., 2015) and also of the individuals used in static and dynamic media (Anschutz et al., 2009; Boyce et al., 2013), this research analyzes the changes in food consumption base on the physical appearance of the individual who actually created the food product. Moreover, the mentioned study situations, analyzes the research population as a whole, in the present research gender has a moderating effect, by that, the analysis regarding the eating behavior of male and female individuals was made separately. Second, additionally to the previous implication, the mentioned researches inspect the changes in amount of food consumption when confronted with different body images. However, the present study evaluates the impact of the same factor in healthy food consumption, separated by gender. Demonstrating the distinct healthy food intake patterns in both men and women when confronted with an obese and a normal body type. Third, crowdsourcing initiatives have been growing. To illustrate this increase, in 2006, 45% of Procter & Gamble product development initiatives had key elements provided externally and had their R&D productivity increased by almost 60% (Huston & Sakkab, 2006).

Unilever, an organization that owns over 400 brands worldwide, intends to use this process ten times more by 2020 in order to get their users more engaged and collaborative in their initiatives (Roth, Petavy, & Braz de Matos, 2016). Taking this crescent importance into account, namely in the food industry (Pétavy et al., 2017), this research approaches the impact that different body types can have on healthy eating behaviors inside the crowdsourcing context.

Social and Managerial Implications

In a societal level, the results obtained can also have a positive impact. Nowadays, the food industry has a big impact in shaping the eating habits of the population, since early ages (Atik & Ertekin, 2011). If shaped in an incorrect way, these eating habits during youth often lead to negative food patterns along the adulthood (Von Normann, 2009). With our findings, the perception on food can be positively manipulated, considering the effects that individual's body type, associated with the food product, has on food perception and consumption and, bottom-line, decrease unhealthy eating habits.

Our findings also present managerial contributions relevant for food product companies who have the intention of increasing their efficiency on marketing strategies. Our studies demonstrate the different healthy food consumption and food perception across gender when presented with distinct body types (normal and obese). When developing marketing strategies and communications food product companies can beneficiate from the obtained results for developing more precise marketing and product communication strategies, targeting their distinct campaigns in a more effective manner for male and female population. Due to an increase of the social media and online world, the majority of these campaigns will

be performed in the online environment. Since women are more prone to social comparison and concerned with their body image “inside” social networks (Tiggemann, Hayden, Brown, & Veldhuis, 2018; Tiggemann & Holland, 2016), this study findings will provide essential support to correctly direct these campaigns to the right profiles and apply the same with the right message.

Limitations and Suggestions for Future Research

This research has some limitations that may be covered in future researches. Firstly, the participants in this research had no restriction about age, since people with different age groups may have a different perception towards distinct physical appearance and distinct eating behaviors (Donini, Savina, & Cannella, 2003; Roblin, 2007). Therefore, if a similar study could be applied using age range (e.g., children; teenagers; adults; elderly) as moderator, not only more age detailed acknowledgments would be made but also improvements in the above-mentioned managerial contributions.

Secondly, this study was only applied to the Portuguese population, consequently neglecting the disparities towards healthy and unhealthy food products, other’s body type and the overall eating behavior in different countries with distinct social, economic and cultural paradigms (Camilleri et al., 2014; Ma, 2015; Salim et al., 2017). With this being said, the same study applied in distinct countries with different cultures could generate interesting results and consequently, enrich the theoretical contributions.

Thirdly, the present study is focused on two body types (normal vs. obese) neglecting the effects that other stereotyped physical appearances could have in both male and female

individuals. For instance, women are affected and have the tendency to compare themselves with thin bodies (Anschutz et al., 2009; Lew et al., 2007) and men with muscular body images (Arbour & Ginis, 2006). In future researches, other body types could be used as the independent variable, resulting in more complex findings and contributing to the existent literature.

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Appendix

Annex A

Healthiness Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Alfa - Sigma	2.82	2.55	0.34	2.14	3.50	8.273	55	0.000
Alfa - Omega	2.98	2.39	0.32	2.34	3.62	9.325	55	0.000
Alfa - Theta	2.98	2.32	0.31	2.36	3.60	9.604	55	0.000
Alfa - Kappa	3.11	2.21	0.30	2.51	3.70	10.507	55	0.000
Beta - Sigma	2.64	3.08	0.41	1.82	3.47	6.427	55	0.000
Beta - Omega	2.80	2.80	0.37	2.05	3.55	7.496	55	0.000
Beta - Theta	2.80	2.77	0.37	2.06	3.55	7.567	55	0.000
Beta - Kappa	2.93	2.59	0.35	2.24	3.62	8.476	55	0.000
Gama - Sigma	3.13	2.49	0.33	2.46	3.79	9.376	55	0.000
Gama - Omega	3.29	2.34	0.31	2.66	3.91	10.503	55	0.000
Gama - Theta	3.29	2.35	0.31	2.66	3.91	10.468	55	0.000
Gama - Kappa	3.41	2.33	0.31	2.79	4.04	10.937	55	0.000
Lambda - Sigma	2.75	2.80	0.37	2.00	3.50	7.356	55	0.000
Lambda - Omega	2.91	2.55	0.34	2.23	3.59	8.531	55	0.000
Lambda - Theta	2.91	2.57	0.34	2.22	3.60	8.484	55	0.000
Lambda - Kappa	3.04	2.50	0.33	2.37	3.71	9.085	55	0.000

Table 1 – Healthiness Paired Sample T-test Results

Annex B

Taste Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Alfa - Sigma	-0.46	2.26	0.30	-1.07	0.14	-1.535	55	0.131
Alfa - Omega	-0.82	2.34	0.31	-1.45	-0.19	-2.622	55	0.011
Alfa - Theta	-1.02	2.28	0.30	-1.63	-0.41	-3.346	55	0.001
Alfa - Kappa	-0.68	2.43	0.32	-1.33	-0.03	-2.091	55	0.041
Beta - Sigma	-0.29	2.24	0.30	-0.89	0.31	-0.955	55	0.344
Beta - Omega	-0.64	2.50	0.33	-1.31	0.03	-1.927	55	0.059
Beta - Theta	-0.84	2.14	0.29	-1.41	-0.27	-2.937	55	0.005
Beta - Kappa	-0.50	2.43	0.32	-1.15	0.15	-1.542	55	0.129
Gama - Sigma	-0.32	2.20	0.29	-0.91	0.27	-1.093	55	0.279
Gama - Omega	-0.68	2.41	0.32	-1.32	-0.03	-2.111	55	0.039
Gama - Theta	-0.88	2.14	0.29	-1.45	-0.30	-3.058	55	0.003
Gama - Kappa	-0.54	2.52	0.34	-1.21	0.14	-1.589	55	0.118
Lambda - Sigma	-0.41	1.86	0.25	-0.91	0.09	-1.656	55	0.104
Lambda - Omega	-0.77	2.28	0.30	-1.38	-0.16	-2.520	55	0.015
Lambda - Theta	-0.96	1.88	0.25	-1.47	-0.46	-3.843	55	0.000
Lambda - Kappa	-0.63	2.02	0.27	-1.17	-0.08	-2.312	55	0.025

Table 2 – Taste Paired Sample T-test Results

Annex C



Image 1 – Male normal body type



Image 2 – Male obese body type

Annex D



Image 3 –Female normal body type



Image 4 – Female obese body type